



RECAP 2014: WHAT'S NEW?

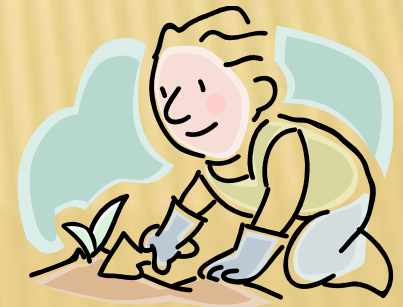
OVERVIEW



- ✘ Text reorganized/Streamlined
- ✘ Text/Figures added for clarification
- ✘ Technical approach revised to reflect current EPA recommendations
- ✘ No change in the overall implementation of RECAP with one exception: VI

EXPOSURE ASSESSMENT

- ✘ CSM omitted
- ✘ Minor revisions to land use NAICS codes
- ✘ Soil AOIC – ProUCL replaces H-statistic spreadsheet
- ✘ Groundwater 3 CC: may use 95%UCL-AM
- ✘ Revised Domenico DF spreadsheet



TOXICITY ASSESSMENT

- ✘ Toxicity value hierarchy revised
- ✘ Toxicity values revised
- ✘ No route-to-route extrapolation
- ✘ RfC replaces RfD_i; URF replaces SF_i
- ✘ Certain carcinogens evaluated as mutagens
- ✘ Some COC have multiple SF, ex) TCE



RISK CHARACTERIZATION

- ✘ SS, MO-1 RS and MO-2 Appendix H RS revised
- ✘ Soil_{es}, GW_{es}, and GW_{air} omitted
- ✘ 10^5 aesthetic cap
- ✘ Clarification on use of alternate risk range
- ✘ Summary of factors to consider in selecting LRS



TEXT: SO, MO-1, MO-2, MO-3

- ✘ Comprehensive guidance for each option
- ✘ Identification of Limiting SS and RS (formerly in Appendix H)
- ✘ MO-3 Probabilistic Risk Assessment omitted



SOIL RE-USE

- × Soil Re-Use option omitted



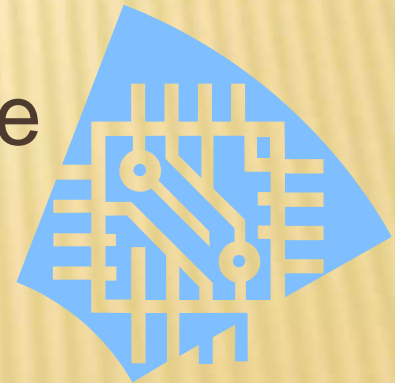
APPENDIX A

- ✘ Site Ranking requirement omitted
- ✘ 2003 Appendix H is now Appendix A:
Methods for the Calculation of SS and RS
- ✘ Streamlined to include equations only
- ✘ Revised equations:
 - Soil_{ni}, Soil_i, GW₁, GW₂, IA
 - New equations/inputs for mutagens
 - Consistent with EPA Mid-Atlantic Regional SL



APPENDIX A

- ✘ EPA Mid-Atlantic Regional SL physical/chemical properties will be used
- ✘ Soil_{GW} Methods 2 (TCLP back-calculation) and 4 (Site-specific partition coefficient) omitted
- ✘ DEQ default assumptions same



APPENDIX B: SITE INVESTIGATION

- ✘ Only minor revisions
- ✘ Requirements for using data from another site to classify groundwater
- ✘ Clarification on use of leachate tests
- ✘ MO-3 Biota sampling – Fish Advisory Protocol



APPENDIX C: RECAP FORMS

- ✘ Use of Forms streamlined
- ✘ MANY Forms omitted
- ✘ New Form for NFA documentation



APPENDIX D

Guidelines for Assessing Constituents with Special Considerations



APPENDIX D: TPH



- ✘ EPA PPRTV toxicity approach replaces TPHCWG
- ✘ Fractions are the same; indicator COC slightly different
- ✘ EPA toxicity data new; TPHCWG EF&T data remains same
- ✘ EPA Method 8015 omitted
- ✘ Alternate approach(es) may be to evaluate for presence of NAPL when Soil_{sat} (10,000 ppm) is exceeded

APPENDIX D: PAH



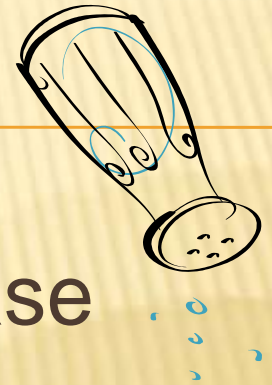
- ✘ Benzo[a]pyrene Equalivant Approach (BAPE) approach for addressing anthropogenic background levels in soil

APPENDIX D: PRODUCED WATER

- ✘ COC for addressing produced water release



APPENDIX D: SODIUM CHLORIDE



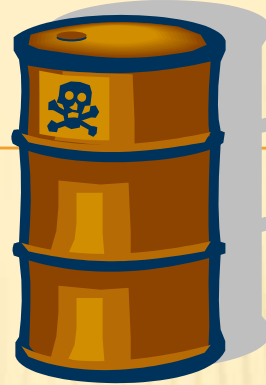
- ✘ Guidance on addressing NaCl release
- ✘ Similar to approach in FAQ
- ✘ SS and MO-1 RS for Na and Cl in soil and groundwater
- ✘ SS and MO-1 RS for agricultural land use (crop protection)

APPENDIX D: LEAD



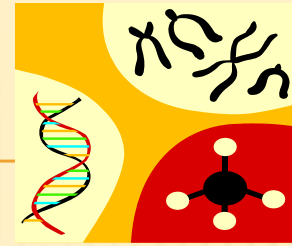
- ✘ Revisions to model inputs
- ✘ Residential soil RS remains at 400 ppm
- ✘ Industrial soil RS revised to 800 ppm
- ✘ New SS and MO-1 Soil_{GW} based on soil/water partition coefficient equation

APPENDIX D: DIOXINS



- ✘ Revised TEFs
- ✘ Added PCB congeners with dioxin-like activity
- ✘ SS and MO-1 RS for total TEQ

APPENDIX D: MUTAGENS



- ✘ A *mutagen* is a carcinogen that has a mutagenic mode of action
- ✘ Some carcinogens with a mutagenic mode of action may cause irreversible changes to DNA which would have a greater effect in early-life exposure (i.e., childhood)
- ✘ Age-dependent adjustment factors (ADAF)
- ✘ Currently 19 mutagens identified
 - vinyl chloride, TCE, B[a]P, D[ah]A, methylene chloride

APPENDIX D: NITROGENOUS COMPOUNDS

- ✘ Nitrate/nitrite/ammonia
- ✘ Assessed based on total nitrogen
- ✘ SS and MO-1 RS
- ✘ Approach similar to FAQ



APPENDIX D: SULFATES

- ✘ Guidance on addressing sulfates
- ✘ Approach similar to that for other non-traditional COC
- ✘ SS and MO-1 RS for soil and groundwater



APPENDIX D: ACIDS/CAUSTICS



- ✘ Assessment primarily focused on pH
- ✘ Approach similar to past Department recommendations and FAQ

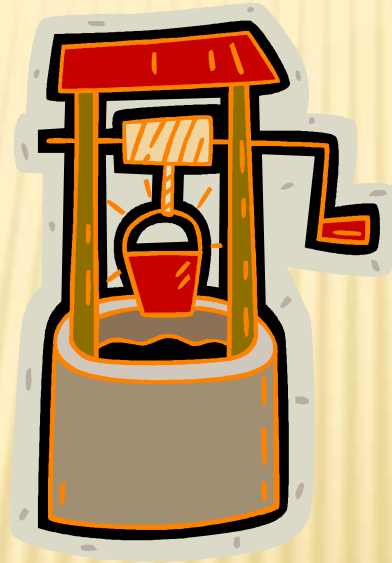
APPENDIX E: NAICS

- ✘ NAICS have been revised to 2012 codes



APPENDIX F: AQUIFER TESTS

- ✘ Additional guidance/clarification on conducting pumping tests



APPENDIX G: ADDITIVITY

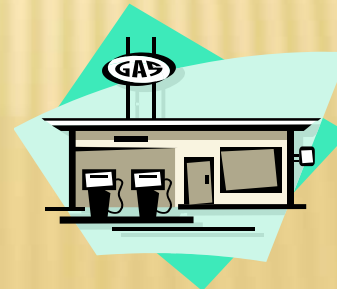


- ✘ 2003 Appendix G (Additivity) has been omitted; however, adjusting RS for additivity has not been omitted
- ✘ Additivity is addressed in the text
- ✘ Examples have been omitted; will be added to FAQs



APPENDIX G 2014: VAPOR INTRUSION PATHWAY

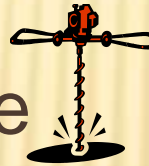
- ✘ EPA released new draft guidance 2013
- ✘ Multiple lines of evidence used to determine if pathway is complete
- ✘ **Chlorinated COC** – approach site-specific
- ✘ **Petroleum hydrocarbons** – screening criteria
 - Inclusion zones (horizontal and vertical)
 - Benzene and TPH levels in soil and groundwater
 - O₂, CO₂, CH₄ soil profiles



APPENDIX G 2014: VAPOR INTRUSION PATHWAY

Sampling

- ✘ Indoor air (earlier in assessment process)
- ✘ Sub-slab soil gas (active facilities)
- ✘ Exterior soil gas
 - Near the vapor source
 - Immediately adjacent to structure



APPENDIX G 2014: VAPOR INTRUSION PATHWAY

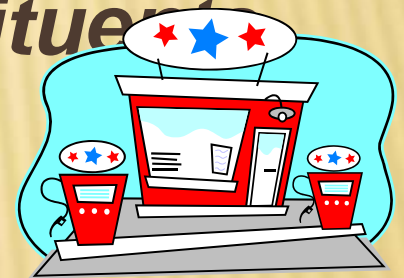
Vapor Intrusion RS:

- ✘ Soil_{es} and GW_{es} omitted
- ✘ New RS for VI pathway:
 - **IA:** Indoor Air (= Ca)
 - **ESG:** Exterior Soil Gas (IA/ α)
 - **SSSG:** Sub-Slab Soil Gas (IA/ α)



APPENDIX H

- ✘ 2003 Appendix H → 2014 Appendix A
- ✘ **2014 Appendix H: A MO-2 Site-Specific RECAP Evaluation for Typical UST Sites and Other Small Sites Impacted with Petroleum Hydrocarbon Constituents**
- ✘ Not limited to UST sites
- ✘ 7 categories of RS:
 - 0.5 acre source area
 - seven f_{oc} ranges



RECAP 2014

× RECAP Timeline



RECAP 2014

